PATENT
Attorney Docket No. 07481.0053-00000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	
Kazuo TAGAWA et al.	Group Art Unit: 1797
Application No.: 10/591,500	Examiner: VASISTH, Vishal V.
Filed: May 25, 2007	
For: REFRIGERATING MACHINE OIL	Confirmation No.: 1464

Mail Stop RCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION UNDER 37 C.F.R. § 1.132

I, Yuji Shimomura, do hereby make the following declaration:

1. My name is Yuji Shimomura, and I have a Bachelor's Degree in the field of Organic Chemistry from Yokohama City University in Japan. I am employed by Nippon Oil Corporation, Lubricants Research Laboratory, where I have been engaged in the research and development of lubricant oils since at least 1990. I am familiar with the field of lubricant oils, particularly lubricant oils for refrigerating machines.

2. I have read and understand the specification and claims of U.S. Patent Application No. 10/591,500 ("the '500 application") directed to a refrigerating machine oil.

3. I have read and understand a Final Office Action in the '500 application, from the United States Patent and Trademark Office, dated August 17, 2009.

4. I have read and understand the amendments to the claims presented in the Reply to Office Action under 37 C.F.R. § 1.114. I understand that these amendments to the claims are being filed with this Declaration under 37 C.F.R. §1.132.

5. I have read and understand U.S. Patent No. 6,231,782 to Shimomura et al. ("Shimomura") and U.S. Patent No. 6,736,991 to Cohen et al.

6. To prepare this Rule 132 Declaration, I conducted and supervised experiments on refrigerating machine lubricant oils, and provide the following statements based on these experiments.

7. The experiments were conducted under standard laboratory conditions to determine certain information, i.e., properties of Base Oil 4 described in Shimomura, at col. 15, lines 25-27, and a new Base Oil 7 (Comparative Example), for comparison with the refrigerating machine oil examples listed in Table 1 of the '500 application, and the refrigerating machine oil listed in claim 1 of the amendments to the claims.

Evaluation of the Properties of Base Oil 4 of Shimomura and a New Comparative Example (Base Oil 7)

	Measuring method	Base Oil 4 (Shimomura)	Base Oil 7 (New Comparative Example)
Kinematic viscosity at 40°C (mm^2/s)	(1)	29.5	37.5
Pour point °C	(2)	-40	<-40
$\%C_A$	(3)	10.0	0
$\%C_N$	(3)	43.0	51
$\%C_P$	(3)	47.0	49
Sulfur content (ppm by mass)	(4)	280	<10
Nitrogen content (ppm by mass)	(5)	20	<10
Stability at 200°C	(6)		
Sludge		A	A
Catalyst change		C	A
ASTM color		L0.5	L0.5
Anti-wear property (mg)	(7)	14.2	15.1
Miscibility (°C)	(8)	-7	> 30

8. The measuring methods indicated in the table above are the same as the measuring methods for the Examples disclosed in the respective paragraph in the '500 application.

(1) JIS K 2283 (See paragraph [0027] of the '500 application)

(2) JIS K 2269 (See paragraph [0025] of the '500 application)

(3) ASTM D3238 (See paragraph [0019] of the '500 application)

(4) JIS K 2541 (See paragraph [0020] of the '500 application)

(5) JIS K 2609 (See paragraph [0017] of the '500 application)

(6) JIS K 2211 (See paragraph [0123] of the '500 application)

(7) ASTM D2714 (See paragraph [0125] of the '500 application)

(8) JIS K 2211 (See paragraph [0127] of the '500 application)

9. As shown in the table above, Base Oil 4 of Shimomura has a sulfur content of 280 ppm whereas in Example 1 of the '500 application, Base Oil 1 has a sulfur content of 48 ppm, Base Oil 2 has a sulfur content of 15 ppm, and claim 1 of the amendments lists a sulfur content of no more than 75 ppm. Furthermore, Base Oil 4 of Shimomura exhibits low stability at 200 °C (in view of the catalyst change labeled "C") and inferior anti-wear property (14.2 mg of wear) compared to both Example 1 (catalyst change to "B" and 8.2 mg wear), and Example 2 (catalyst change to "A" and 10.8 mg wear), as shown in Table 1 of the '500 application.

10. It is well known to one of ordinary skill in the art that when sulfur content of a mineral oil is decreased, its aromatic content also is decreased. Accordingly, one of ordinary skill in the art would recognize that if the sulfur content of Base Oil 4 of Shimomura were decreased to fall within a sulfur content range of no more than 75 ppm, as recited in amended claim 1, its percentage of aromatic ring structures (%CA) would be lowered to the point that it is out of the range for %CA recited in amended claim 1.

11. As shown in the table above, a new Comparative Example, referred to as Base Oil 7, has a zero percentage of %CA. The examples of the claimed oil in the '500 application have a %CA range from 8 to 15. Our comparison revealed a surprising beneficial result obtained by the refrigerating machine oil disclosed in the '500 application and recited in amended claim 1. The miscibility of Base Oil 7 with R22

refrigerant is >30 °C. Examples 1 and 2 in the '500 application, however, exhibit a surprisingly superior miscibility of 3 °C and 6 °C, respectively.

12. In summary, the above evaluation of the properties of Base Oil 4 of Shimomura shows that the measured sulfur content of Base Oil 4 is 280 ppm, which is outside the range of no more than 75 ppm recited in amended claim 1 of the '500 application. Furthermore, Base Oil 4 exhibits low stability at 200 °C and inferior anti-wear property, compared to Examples 1 and 2 of the claimed refrigerating machine oil in the '600 application. The above evaluation of the properties of Base Oil 7 indicates that Base Oil 7 having a 0 %CA, shows an inferior miscibility, compared to a surprisingly superior beneficial miscibility of 3 °C and 6 °C for the refrigerating machine oil having a % CA range of 8 to 15, as recited in amended claim 1.

13. I declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Dated: 2009/11/13 By: Yuji Shimomura
Yuji Shimomura